

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- VIth SEMESTER-EXAMINATION – MAY- 2012****Subject code: 161504****Date: 17/05/2012****Subject Name: Metal Cutting & Advanced Manufacturing Processes****Time: 10:30 am – 01:00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) What do you understand by economics of metal cutting? Discuss in detail. **07**
(b) Explain working principle of NC and CNC machines and also discuss differences between them. **07**

- Q.2** (a) Name and discuss various elements of metal cutting. **07**
(b) Discuss Electro Discharge Machining (EDM) process. Discuss requirement of dielectric fluid used in process. **07**

OR

- (b) Differentiate between orthogonal cutting and oblique cutting. **07**

- Q.3** (a) Discuss various types of chips formed in metal cutting and conditions under which each type is formed. **07**
(b) What is chip reduction coefficient? What are the effects of cutting variables on the chip reduction coefficient. **07**

OR

- Q.3** (a) When is negative rake cutting employed? Why? **07**
(b) What are the essential properties of a cutting fluid? Also state its applications. **07**

- Q.4** (a) How will you calculate the work done and power required in metal cutting. **07**
(b) What is machinability? State the factors which come in to play while evaluating machinability of any metal. **07**

OR

- Q.4** (a) Discuss Electro-Chemical Machining process in detail with its working principle, applications and limitations. **07**
(b) Discuss Ultrasonic Machining process in detail with its working principle, process characteristics, applications and limitations. **07**

- Q.5** (a) Draw and discuss merchant's circle diagram. **07**
(b) Discuss Taylor's relationship for cutting speed and tool life. **07**

OR

- Q.5** (a) Discuss Computer Integrated Manufacturing (CIM). **07**
(b) Discuss High Velocity Forming process in detail. **07**
